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*Prova May 17/49*PROBLEMS OF THE CASPIAN FISHERIES

Each season in the Caspian Sea tens of millions of pounds of fish are caught. No other sea can compare to it in variety of fish. Among the species exploited are three kinds of sturgeon (caviar, beluga and sevruga), whitefish, herring, caspian roach, pike perch, carp and bream. The Caspian Sea is important for its seal take, the oil of which is highly valued for medicinal and industrial uses.

For all this wealth the Caspian Sea is indebted to the rivers which flow into it, especially the Volga River. Every year the Volga carries into the sea millions of tons of organic substances, hundreds of tons of nitrogen, thousands of tons of phosphorous and other elements.

These serve as primary foods for the fish inhabiting the Caspian.

Soviet fishery scientists are confronted with an important problem: how to further increase the commercial importance of the Caspian Sea and to augment its reserves.

Soviet scientists have already made remarkable progress in the realization of these aims. This is attributable to the fact that the Soviet fishing science has abided steadfastly by I.V. Michurin's great slogan, "Not wait for the blessings of nature but to seize them from her is our job".

During 1935-1937, owing to the high salt content of the waters in the North Caspian, caused by low spring influx of fresh water, the food base for fish was considerably reduced. It became necessary to assure a permanent food base in the North Caspian waters by acclimating the the region new types marine life suitable for fish food.

Russian scientists have for some time now given attention to the important similarity between the species composition of fish and the mode of living of other marine life in the Caspian and Azov seas. It was therefore decided to seek a type of worm common to the Sea of Azov for use as a food source in the Caspian. The choice fell on the polychaetous worm nereis, because of its high food value and because it serves as the food for the most important commercial fish.

604
SECRET

SECRET

The transplanting of these worms took place from 1939-1941. In all, 65,000 specimens of nereis were transplanted into four different points of the sea. The scientific workers observed very closely the fate of the food worm. The efforts of the scientists were rewarded with shining success. As early as 1944 these worms were found in the stomachs of sturgeon. In 1948 a specially organized expedition reported that the propagation area of nereis covered many thousands of square kilometers. The nereis is now the food source for the basic benthic fish of the Caspian.

It has also become the favorite food of the osetr and sevruga sturgeons.

The scientific fishery organizations were confronted with still another problem: to discover a means of maintaining the sturgeon schools by scientific breeding. The artificial impregnation of the roe and obtaining larvae seemed a relatively simple matter, but, unfortunately, it was of little effect. Practice has shown that the larvae of osetr sturgeons perish in tremendous numbers and that only a negligible proportion reach maturity.

In order to prevent this it was deemed necessary to nurture them in artificial ponds until two or three months of age, i.e., until that stage of development at which they seem self-sufficient. Another problem arose-- to provide the young with live food. Soviet scientists managed to develop small worms (*oligo chaeta*) and crawfish (*daphnia*) on which the young of the osetr sturgeon could feed.

But the searching minds of the Soviet scientists are not satisfied with these successes. A central problem is to create means of hybridization of new forms of sturgeon adaptable to multiplying in the estuaries of controlled (*zaragulirovanny*) rivers.

Another problem confronting Soviet science is building up a large reserve of the so-called semi-anadromous fish: the Caspian roach, bream, carp and pike perch. A generation of the young of these fish was obtained by creating, on the basis of natural ponds, deltas for specific types of pisciculture. Embankments and sluices protected them from predatory or

SECRET

SECRET

infected fish. This experiment in pisciculture, never before attempted, proved to be extremely successful. Under these conditions the productivity of fry is 5 or 6 times greater than by natural spawning.

The great value of this system is that it permits a sound union of the interests of the fishing and agriculture. Practice has revealed that the consistent rotation in using underwater land for the breeding of young fish and the sowing of grain crops and grasses greatly increases the biological productivity of a pond.

At present, scientific pisciculture occupies only about one percent of the area of the potential spawning grounds of the delta. This is entirely inadequate. Meanwhile only the agencies of Glavrybvod (Main Administration of Pisciculture) are working on this matter. Collective fisheries should be brought into the job, since increasing the reserves of commercial fish is very much to their interest. They have not, however, ^{participated} as yet.

Some time ago it became necessary to exploit certain spawning grounds of the Volga delta which were located in areas under the jurisdiction of the Ministry of Agriculture and defined by the organs of that Ministry as hay and pasturage land. These lands were hence designated as belonging to the state fish economy. Considerable meliorative work must be done and a hydro-geographical working plan drawn up for the whole delta if wide development of fish breeding is to be obtained.

Only a comparatively small portion of the delta is now being used for either spawning or sowing. This is a huge territory, estimated to be in the hundreds of thousands of hectares. It is covered by an impenetrable mass of reeds and rushes which are very picturesque but which at the same time make fisheries development very difficult.

The spring flood waters inundate a large portion of the lower delta and thus retard the current.

The reeds have grown together so thickly that they form a natural filter for millions of tons of mineral materials. Improving the delta will permit much important food matter to reach the fish in the Caspian, and will be of great help to transport in the delta area. Hundreds of thousands of hectares of extremely fertile land will be freed for agricultural purposes as well.

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